

**ABSTRACT**

**ANALYSIS OF sRANKL/OPG RATIO RELATED TO BONE TURNOVER  
CHANGES IN EPILEPSY PATIENT WHO GET LONG-TERM THERAPY OF  
VALPROATE-PHENITTOIN COMBINATION**

(The Study at Neurology Department Haji General Hospital Surabaya)

**Objective:** Epilepsy is a neurological disorder that characterized by electroencephalographic changes accompanying seizures. The main therapy for epilepsy is an Anti-Epileptic Drugs (AEDs) for a long time administration. Long-term use of AEDs induce hepatic enzyme (i.e. phenytoin) and valproate has adverse side effects on bones. Fractures risk in epilepsy patients increased two to six fold. AEDs alter bone metabolism by decreasing vitamin D levels and other mechanisms such as increasing bone biomarkers like RANKL and OPG. RANKL and OPG are main regulators of bone resorption. Increased RANKL / OPG ratio cause an increase the osteoclastogenesis and bone resorption. This study was aimed to analyze the ratio of sRANKL / OPG in epileptic patients who received long-term therapy of valproate – phenytoin combination.

**Method:** The method of this study was an observational prospective study. The study was conducted at Neurology Department Haji General Hospital Surabaya. The inclusion criteria were all epileptic patients aged 18-55 years in the period July -September 2018, received OAE therapy  $\geq 6$  months. The exclusion criteria were patients with a history of thyroid disorders, chronic kidney disorders, drug use that affects bone turnover, vitamin D or calcium supplements use and menopause patients. The data obtained were serum levels of sRANKL and OPG in pg / ml units, then these data will be used as a ratio. Data were analyzed statistically.

**Result:** The result of this study; the ratio of sRANKL / OPG in epilepsy patients receiving combination therapy ( $n = 9$ ) was  $4.827 \pm 1.461$  compared to the single group valproate ( $n = 11$ )  $4.623 \pm 0.785$  and the single phenytoin group ( $n = 10$ )  $3,664 \pm 0.871$ . Different test between these 3 groups has a significant difference with  $p = 0.048$ .

**Conclusion:** There is an increase in the sRANKL / OPG ratio in epilepsy patients who received long-term valproate-phenytoin combination therapy.

**Keywords:** epilepsy patients, bone, anti-epileptic drug, long-term therapy